Tomographic Gamma Scanning System

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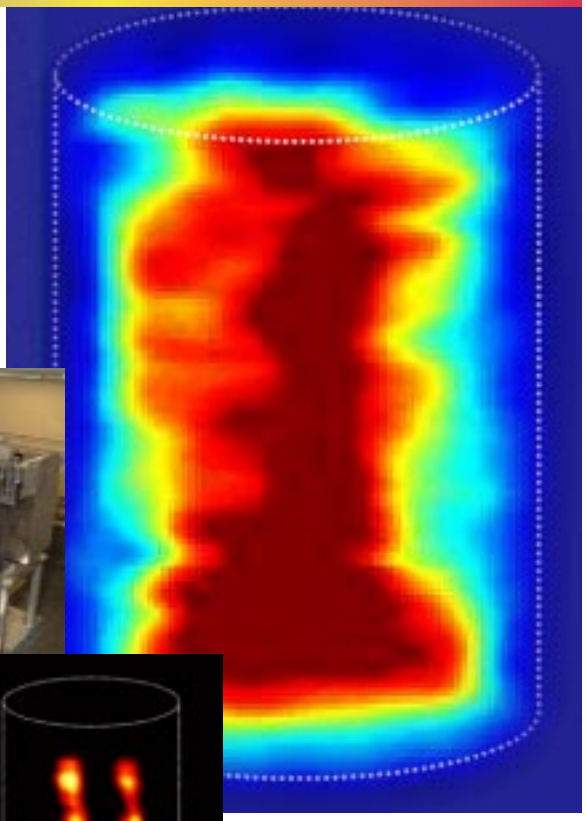

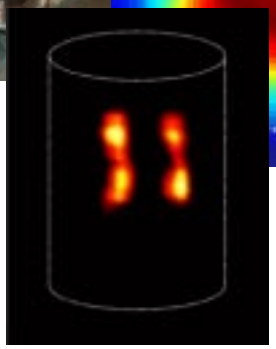

Tomographic gamma scanning (TGS) accurately measures gamma-ray-emitting radioisotopes in large samples containing heterogeneous material, such as residues from nuclear material processing facilities. Transmission-corrected, gamma-ray emission, computerized tomography is used to determine the location and quantity of selected radioisotopes within sealed containers that hold up to 83 gallons. High-resolution, gamma-ray spectroscopy is used in both transmission and emission computerized tomography scanning modes to allow accurate measurements of gamma-ray peaks in complex spectra.

Transmission-corrected, gamma-ray emission computerized tomography shows the gamma-ray attenuating matrix material and the location of radioisotopes located in a 55-gallon drum (background photo and bottom inset photo). A transportable TGS system (shown in the left inset photo), is being used at Rocky Flats, Colorado, to safeguard and certify transuranic waste before it is shipped to the Waste Isolation Pilot Plant in New Mexico. The versatility and accuracy of TGS is unprecedented.

Applications

Tomagraphic gamma scanning can be used to
- assay radioisotopes arbitrarily distributed in heterogeneous matrix material;
- examine residues from weapons-production facilities to meet requirements for nuclear material safeguards;
- measure transuranic waste to meet the acceptance criteria for disposal at the Waste Isolation Pilot Plant;
- locate gamma-ray-emitting materials inside sealed containers to facilitate repackaging operations; and
- assess medical and nuclear reactor waste products.

Benefits

The TGS system is a versatile, nondestructive assay technique that benefits nuclear safeguards and waste management operations by
- improving performance and reducing costs;
- replacing lower throughput methods such as calorimetric assay for decommissioning facilities;
- reliably characterizing transuranic waste; and
- reducing personal exposure.

Availability of applications for commercial licensing

TGS System is commercially available from the following licensed vendors:
BNFL Instruments, Inc., PerkinElmer, Instruments, Inc., and A.N. Technology, Inc.

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